

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (withdrawn): A stereoscopic image encoding and decoding device, comprising:
a stereoscopic image encoding device and a stereoscopic image decoding device,
wherein
said stereoscopic image encoding device includes
a stereoscopic image pre-processor for multiplexing left-eye images and right-eye
images and forming one image, and
an image encoding unit for encoding said one image processed by the
stereoscopic image pre-processor, while
said stereoscopic image decoding device includes
an image decoding unit for decoding said one image encoded by the image
encoding unit, and
a stereoscopic image post-processor for separating said one image decoded by the
image decoding unit into the left-eye images and the right-eye images.

2. (withdrawn): The stereoscopic image encoding and decoding device as set forth
in claim 1, wherein
the left-eye images are arranged in odd lines and the right-eye images are
arranged in even lines, or the right-eye images are arranged in the odd lines and the left-eye
images are arranged in the even lines, so to form one image as an interlace image,

when an optimum block is selected, from the block formed by the data in the odd lines and the even lines and the block formed by the data only in the odd lines or only in the even lines, and further, an optimum prediction method is selected, from frame prediction from forward and backward frames or field prediction from forward and backward fields,

an error between the predicted block data and the block data is orthogonally transformed, quantized, and variable-length encoded, and as a result, the block and the prediction method having the minimum code amount of said block data are selected.

3. (currently amended): A stereoscopic image encoding and decoding device, comprising

a stereoscopic image encoding device and a stereoscopic image decoding device, wherein

said stereoscopic image encoding device includes

a stereoscopic image pre-processor for multiplexing left-eye images, right-eye images, and high resolution added images for turning the left-eye images or the right-eye images to the images of high resolution and forming one image, and

an image encoding unit for encoding said one image processed by the stereoscopic image pre-processor, while

said stereoscopic image decoding device includes

an image decoding unit for decoding said one image encoded by the image encoding unit, and

a stereoscopic image post-processor for separating said one image decoded by the image decoding unit into the left-eye images, the right-eye images, and the high resolution added images for turning the left-eye images or the right-eye images to the images of high resolution.

4. (original): The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

ones of the left-eye images, the right-eye images, and the high resolution added images are arranged in a left 1/3 portion of one image, the other ones are arranged in a middle portion of said one image, and further the other ones are arranged in a right 1/3 portion of said one image.

5. (original): The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

ones of the left-eye images, the right-eye images, and the high resolution added images are arranged in a top 1/3 portion of one image, the other ones are arranged in a middle portion of said one image, and further the other ones are arranged in a bottom 1/3 portion of said one image.

6. (currently amended): The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

when the ~~high-resolution-plane-images~~ of high resolution are the left-eye images, ones of the right-eye images and the ~~high-resolution-plane-images~~ of high resolution formed by the left-eye images and the high resolution added images for turning the left-eye images to the high resolution images, are arranged in the left 1/3 to 2/3 portion of one image and the other ones are arranged in the right 1/3 to 2/3 portion of said one image,

when the ~~high-resolution-plane-images~~ of high resolution are the right-eye images, ones of the left-eye images and the ~~high-resolution-plane-images~~ of high resolution formed by the right-eye images and the high resolution added images for turning the right-eye images to the

high resolution images, are arranged in the left 1/3 to 2/3 portion of one image and the other ones are arranged in the right 1/3 to 2/3 portion of said one image.

7. (withdrawn): A stereoscopic image encoding and decoding device, comprising
a stereoscopic image encoding device and a stereoscopic image decoding device,
wherein

said stereoscopic image encoding device

multiplexes the left-eye images and the high resolution added images for turning
the left-eye images to the high resolution images so to form one first image, and multiplexes the
right-eye images and dummy images so to form one second image, when the high resolution
plane images are the left-eye images,

multiplexes the right-eye images and the high resolution added images for turning
the right-eye images to the high resolution images so to form one first image, and multiplexes the
left-eye images and the dummy images so to form one second image, when the high resolution
plane images are the right-eye images, and

further a stereoscopic image pre-processor for combining said first image with
said second image to form one third image, and

an image encoding unit for encoding said one third image processed by the
stereoscopic image pre-processor, are provided, while

said stereoscopic image decoding device includes

an image decoding unit for decoding said one third image encoded by the image
encoding unit, and

a stereoscopic image post-processor for separating said one third image decoded
by the image decoding unit into one first image consisting of the left-eye images and the high

resolution added images and one second image consisting of the right-eye images and the dummy images, further separating said one first image into the left-eye images and the high resolution added images, and separating said one second image into the right-eye images, when the high resolution images are the left-eye images, and

for separating said one third image decoded by the image decoding unit into one first image consisting of the right-eye images and the high resolution added images and one second image consisting of the left-eye images and the dummy images, separating said one first image into the right-eye images and the high resolution added images, and further separating said one second image into the left-eye images, when the high resolution images are the right-eye images.

8. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 7, wherein

the first image is arranged in the odd lines and the second image is arranged in the even lines, or the second image is arranged in the odd lines and the first image is arranged in the even lines, and the third image is defined as an interlace image, and

the dummy image is defined as "0" data.

9. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 7, wherein

the first image is arranged in the odd lines and the second image is arranged in the even lines, or the second image is arranged in the odd lines and the first image is arranged in the even lines, and the third image is defined as an interlace image, and

the dummy image is set at the same value as pixel data at a left side or pixel data at a right side.

10. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 7, wherein

the first image is arranged in the odd lines and the second image is arranged in the even lines, or the second image is arranged in the odd lines and the first image is arranged in the even lines, and the third image is defined as an interlace image, and

the dummy image is set at the average value of the pixel data at the left and the pixel data at the right.

11. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 10, wherein

the dummy image in a leftmost column on a screen or in a rightmost column is defined as "0" data.

12. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 10, wherein

the dummy image in the leftmost column on the screen is set at the same value as the right pixel data thereof, or the dummy image in the rightmost column on the screen is set at the same value as the left pixel data thereof.

13. (currently amended): The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

ones of the left-eye images, the right-eye images, and the high resolution added images, are arranged in two of the odd lines of the $(3n+1)$ th frame (n is an integer of 0 and more), the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame,

the other ones are arranged in the other two of the odd lines of the $(3n+1)$ th frame, the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame,

further the other ones are arranged in ~~further the other~~ the remaining two lines out of the odd lines of the $(3n+1)$ th frame, the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame, and

the images arranged in the odd lines and the even lines of the same frame are defined as interlace images.

14. (original): The stereoscopic image encoding and decoding device as set forth in claim 13, wherein

ones of the left-eye images, the right-eye images, and the high resolution added images are arranged in the odd lines of the $(3n+1)$ th frame and the even lines of the $(3n+2)$ th frame (n is an integer of 0 and more), the other ones are arranged in the even lines of the $(3n+1)$ th frame and the odd lines of the $(3n+3)$ th frame, and further the other ones are arranged in the odd lines of the $(3n+2)$ th frame and the even lines of the $(3n+3)$ th frame, and the images arranged in the odd lines and the images arranged in the even lines of the same frame are defined as interlace images.

15. (withdrawn): A stereoscopic image encoding and decoding device, in which a flag identifying a stereoscopic image stream is inserted into a encoded transmission and record stream, on a side of encoding, and the identification of the stereoscopic image stream is detected by detecting said flag, and decoded and post-processed as the stereoscopic image, on a side of decoding.

16. (withdrawn): A stereoscopic image encoding and decoding device, in which a flag indicating which image forms the stream, of only a plane image, only a stereoscopic image, a stereoscopic image and plane image, a stereoscopic image and high resolution plane image, and a stereoscopic image and high resolution plane added image, is inserted into a encoded transmission and record stream, on the side of encoding, and of only the plane image, only the stereoscopic image, the stereoscopic and plane image, the stereoscopic and high resolution plane image, and the stereoscopic image and high resolution added image, which image forms the stream is detected by detecting said flag, and the image is decoded and post-processed, according to the detected result, on a side of decoding.

17. (withdrawn): A stereoscopic image encoding and decoding device, in which a flag indicating a multiplexing method of all or one of a plane image, a stereoscopic image, a high resolution plane image, and a high resolution added image in the stream, is inserted into a encoded transmission and record stream, on a side of encoding, and the multiplexing method of all or one of the plane image, the stereoscopic image, the high resolution plane image, and the high resolution added image in the stream, is detected by detecting said flag, and the image is decoded and post-processed, according to the detected result, on a side of decoding.

18. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 1, wherein

the multiplexing method includes all or one of: whether the high resolution plane image or the high resolution added image corresponds to the left-eye images and/or the right-eye images, which data to be arranged in the odd fields and the even fields in the case of an interlace image, how to arrange continuous data, and how to construct dummy data.

19. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 1, wherein

MPEG (Moving Picture Expert Group) method is used as a encoding method.

20. (withdrawn): The stereoscopic image encoding and decoding device as set forth in claim 1, wherein

MPEG method is used as a encoding method, and a difference of the left-eye image and the right-eye image is detected by every macro block; when the difference is larger than a rated value, a field DCT is applied, while when the difference is smaller than a rated value, a frame DCT is applied.